

# Claims

[c1] What is claimed is:

1. A method for prevention maintenance management of at least one piece of semiconductor equipment, each piece of equipment processing a plurality of semiconductor products according to at least one corresponding process parameter, the method comprising:  
recording each process parameter of each piece of equipment;  
recording processing conditions of each piece of equipment as at least one corresponding equipment parameter when each piece of equipment is processing;  
evaluating and recording time and cost of prevention maintenance after each piece of equipment has run prevention maintenance, evaluating the quality of semiconductor products after each semiconductor product has been processed; and  
analyzing a relationship between the corresponding process parameter, the equipment parameters, prevention maintenance cost, and the semiconductor product quality of each piece of equipment.

[c2] 2. The method of claim 1, wherein the step of evaluating

the cost further comprises:  
recording components used in prevention maintenance  
of each piece of equipment; and  
evaluating prevention maintenance cost according to the  
component cost.

- [c3] 3. The method of claim 1, wherein the step of analyzing  
further comprises:  
evaluating if the cost of prevention maintenance is within  
a specific range.
- [c4] 4. The method of claim 1, wherein the step of analyzing  
further comprises:  
evaluating the prevention maintenance period of a piece  
of equipment.
- [c5] 5. The method of claim 1, wherein the step of evaluating  
the quality of each semiconductor product is according  
to the rectified base line of the semiconductor product  
quality after prevention maintenance.
- [c6] 6. The method of claim 1, further comprising:  
rectifying prevention maintenance and standard operat-  
ing procedure (SOP) according to the relationship of the  
corresponding process parameter, the corresponding  
equipment parameters, prevention maintenance cost,  
and the semiconductor product quality.

- [c7] 7. The method of claim 1, further comprising:  
rectifying prevention maintenance and evaluating quality and cost of substituted components according to the relationship of the corresponding process parameter, the corresponding equipment parameters, prevention maintenance cost, and the semiconductor product quality.
- [c8] 8. The method of claim 1, wherein the step of analyzing uses a T-test, a one-way analysis of variance (ANOVA), a two-way analysis of variance, or box plots to analyze.
- [c9] 9. The method of claim 1, further comprising:  
feedback monitoring to transmit the analytic results to a user through a network or a man-machine interface.
- [c10] 10. A system for prevention maintenance management of at least one piece of semiconductor equipment, each piece of equipment processing a plurality of semiconductor products according to at least one corresponding process parameter, the system comprising:  
a process interface module for recording each process parameter of each piece of equipment;  
an equipment interface module for recoding processing conditions of each piece of equipment as at least one corresponding equipment parameter when each piece of equipment is processing;

a cost evaluation module for evaluating and recording time and cost of prevention maintenance after each piece of equipment has run prevention maintenance; a quality monitor module for evaluating the quality of semiconductor products after each semiconductor product has been processed; and an analysis core module for analyzing a relationship between the corresponding process parameter, the equipment parameters, prevention maintenance cost, and the semiconductor product quality of each piece of equipment.

- [c11] 11. The system of claim 10, wherein the cost evaluation module further comprises:
  - a component database for recording components used in prevention maintenance of each piece of equipment; and
  - a computation module for evaluating prevention maintenance cost according to component cost.
- [c12] 12. The system of claim 10, wherein the analysis core module further evaluates if the cost of prevention maintenance is within a specific range.
- [c13] 13. The system of claim 10, wherein the analysis core module further evaluates the prevention maintenance period of a piece of equipment.

- [c14] 14. The system of claim 10, wherein the quality monitor module evaluates the quality of each semiconductor product according to the rectified base line of the semiconductor product quality after prevention maintenance.
- [c15] 15. The system of claim 10, wherein the analysis core module further rectifies prevention maintenance and standard operating procedure.
- [c16] 16. The system of claim 10, wherein the analysis core module further rectifies prevention maintenance and evaluates the quality and cost of substituted components.
- [c17] 17. The system of claim 10, wherein a T-test, a one-way analysis of variance, a two-way analysis of variance, or box plots are used to analyze.
- [c18] 18. The system of claim 10, further comprising:  
a monitor feedback interface for transmitting the analytic results to a user through a network or a man-machine interface.